NASA's Applied Remote Sensing Training Program (ARSET)

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NASA Health and Air Quality Applications Program Review

September 24-26, 2013

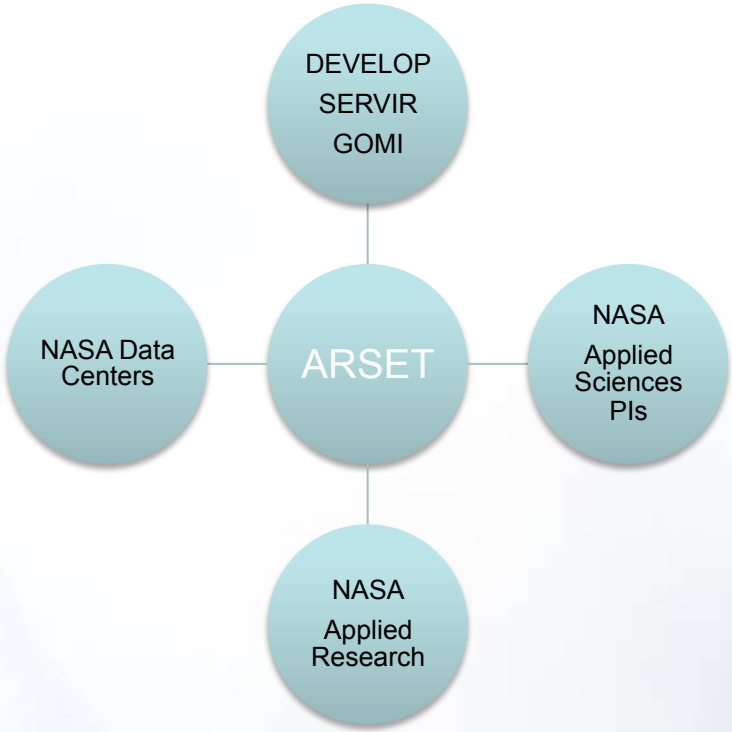
Applied Remote Sensing Training (ARSET)

GOAL:

Increase utilization of NASA observational and model data for decision-support

Objectives:

- Provide end-user communities and institutions with **professional hands-on technical workshops**
- Build long term partnerships with end-user communities and institutions in the public and private sectors



ARSET disseminates the usage of ***existing*** NASA data, web tools, Decision Support Systems and applied research, in addition to collaborating with other capacity building programs within NASA

ARSET Team Members

Project Lead
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Air Quality
- Pawan Gupta (GSFC/GESTAR)
- Richard Kleidman (GSFC/SSAI)
- Yang Liu (Emory University)
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Ecological/Land Management
Evan Johnson (Student/AMES/Baeri)
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Water Resources
- Brock Blevins (Student/UMBC)
- Chris Mattmann (JPL/Caltech)
- Amita Mehta (GSFC/UMBC)
- Tom Painter (JPL/Caltech)

Program Evaluation
Annelise Carleton-Hug (Trillium A.)

Administrative Support
Marines Martins (GSFC/SSAI)

Module Translation (Spanish)
David Barbato (Student/UMBC)

Gradual Learning Approach

Basic in person course

- For individuals and institutions new to remote sensing
- Trainings at professional conferences

Online courses

- Provide background material in preparation for in person trainings
- Advanced online courses on special topics

Advanced in person course

- Focused on a specific application/problem: for example impact of snow melt in California on stream flow
- Requires basic online or in person course.

ARSET Best Practices

- ✓ 1. Trainers first: Skill building for NASA Scientists
- ✓ 2. Leveraging of multiple NASA resources
  - **Applied Sciences Program PIs and applied research**
  - NASA Data Centers
  - Other Capacity Building Programs
- ✓ 3. Gradual learning approach
  - ABCs of NASA Data: What and what for ?
  - Access and analysis
  - Application to decision-support
- ✓ 4. Heavily focused hands-on learning
- ✓ 5. Continued/ongoing interaction with end-users
- ✓ 6. Workshop Surveys
- ✓ 7. Ongoing Project Evaluation Plan

Summary of accomplishments (2012-2013)

- ARSET expanded its online courses in 2012-2013
- The program more than doubled the number of online and in-person participants from ***166 (2011) to 350 participants in 2012.***

- Since September 2012:
  - 8 courses on air quality applications
  - 3 courses on water resources, covering uses of flooding tools, precipitation, and snow products

ARSET: Match-Making Services

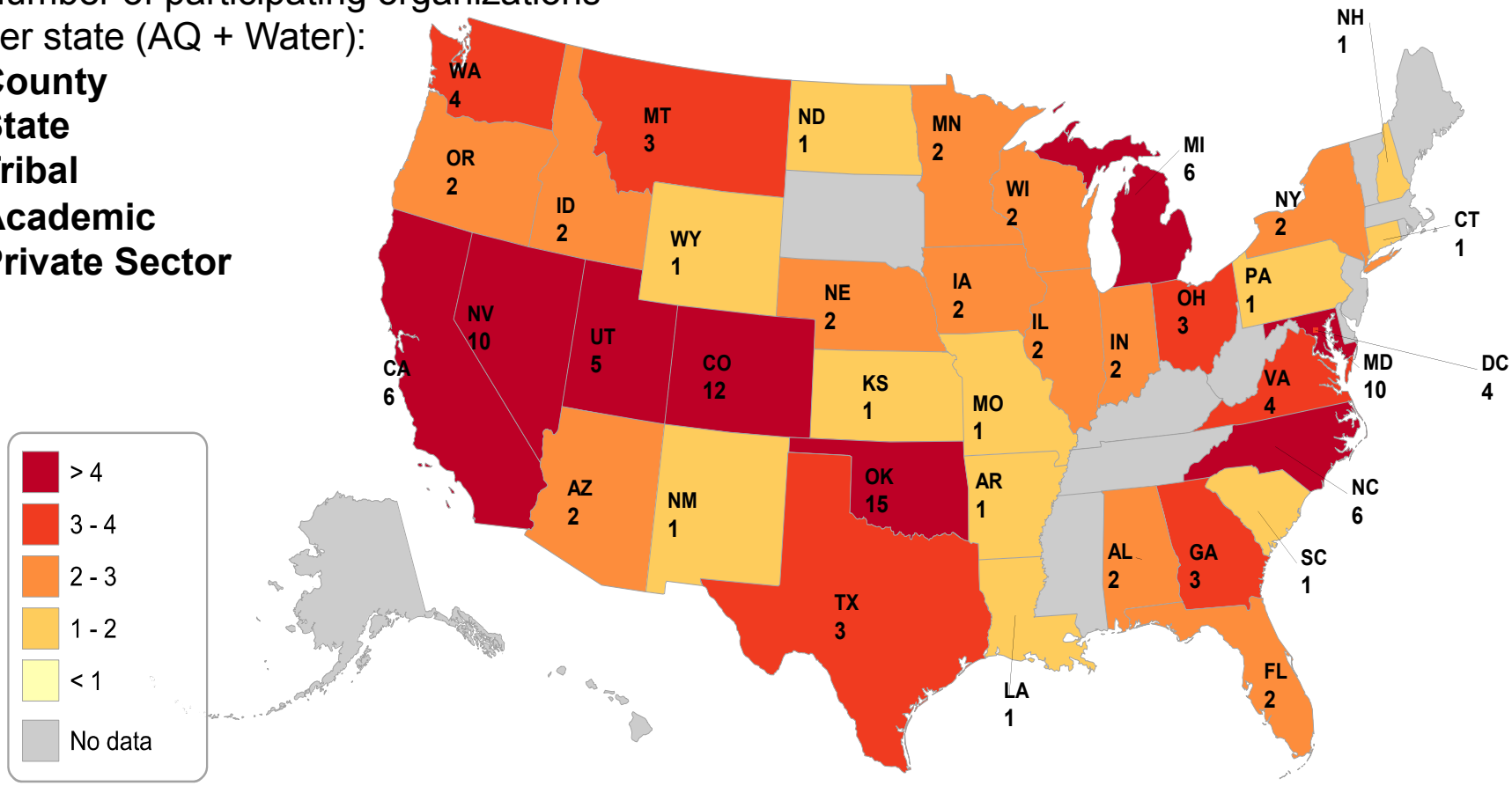
Idaho Department of Environmental Quality

"*I think building the contact list by interacting with the instructors during the 4 day workshop was very beneficial, especially since you know people. So by association, I know people who know people. All joking aside, that is very helpful and provides me a contact who can potentially answer my question, or if not that, very possibly point me to the person who can..*"

ARSET Reach Update: 2009 – June 2013

Number of participating organizations per state (AQ + Water):

County
State
Tribal
Academic
Private Sector



Federal Agencies:

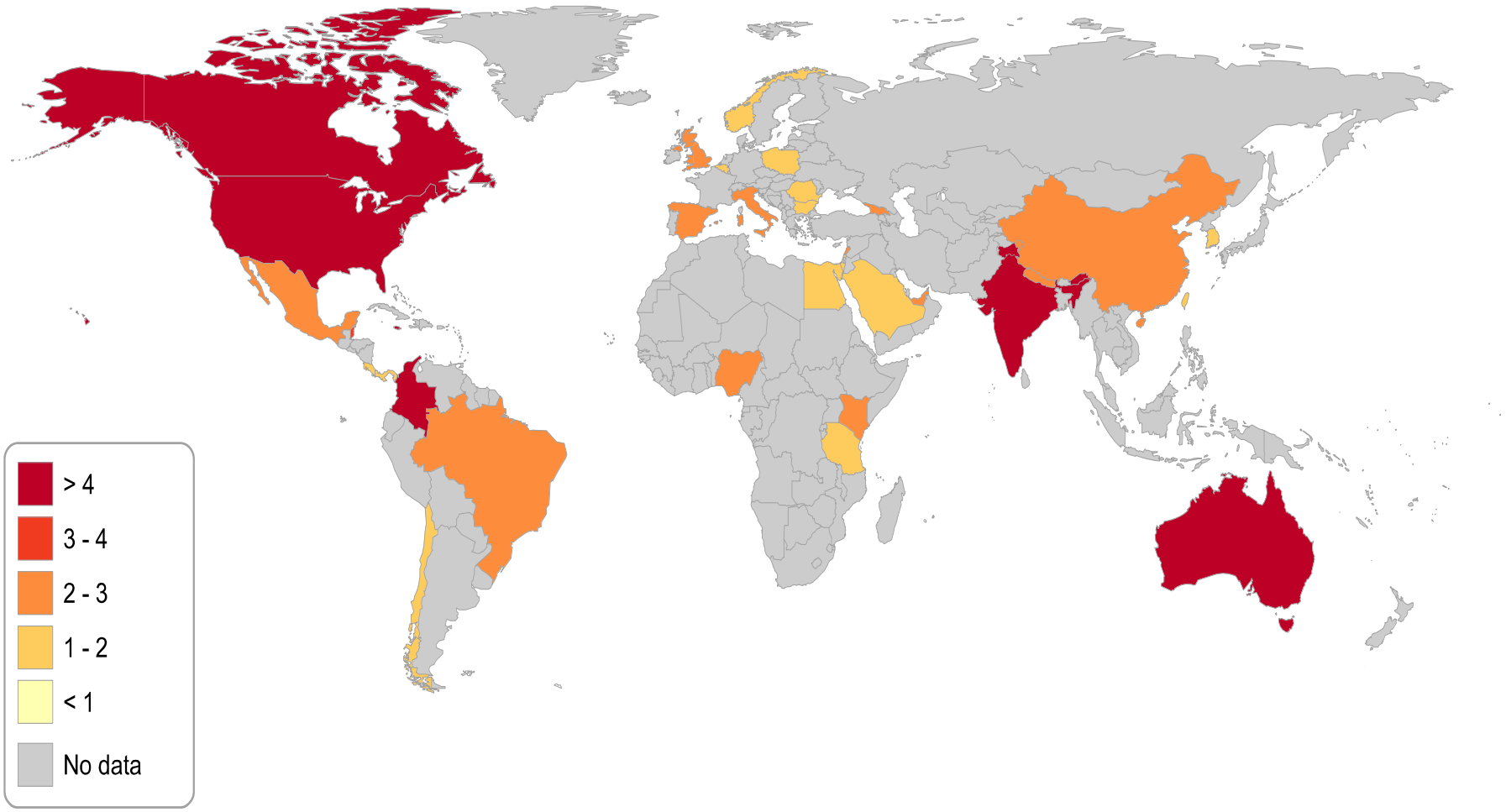
NOAA, USGS, USAID, USACE, BLM, Bureau Rec

NOAA, US Forest Service, National Park Service, EPA

NOAA, USAID, USGS

ARSET Reach Update: 2009 – June 2013

Number of participating organizations per country: Air Quality and Water Resources



NASA Training on Smoke/Fire and Dust Applications with the Utah Department of Environmental Quality, Salt Lake City, Utah

- April 22 – 25, 2013, Salt Lake City, Utah
- 21 attendees from federal and state agencies in Utah, Wyoming, Idaho, Colorado and Washington and the Nez Perce tribe.
- Co-sponsored by the **Utah Department of Environmental Quality** and held at their facility
- **NASA and NOAA smoke/fire and dust products** and their applications to air quality monitoring.
- **USDA Forest Service introduced their own tool on geospatial fire data** for monitoring and analysis during the training.
- Case studies of fires in Utah and Colorado (July 30, 2012) and Eastern Oregon (August 29, 2012) were prepared for study and completion by attendees.
- **MISR Case studies** to build capacity in access to smoke plume height to use in models for assessment of long range transport.

Figure 1 Utah Department of Environmental Quality facility, Salt Lake City, Utah. Utah, Idaho , and Wyoming Departments of Environmental Quality, Washington State Dept. of Ecology, the U.S. Forest Service, the Nez Perce tribe and a solar energy company. End-user feedback from a NASA air quality online course held in February-March 2013 and interaction with UDEQ were used to tailor this training event to western environmental management issues and to refine the agenda to focus on 1) NASA aerosol products in greater detail and 2) use of smoke/fire and dust product for PM2.5 monitoring in the region.

Course Taught by Pawan Gupta, Richard Kleidman, and Yang Liu

Item Of Note: End-user feedback from Training in Salt Lake City

Alemu Tadesse - meteorologist at SunEdison (Solar Energy Company)

" *I got permission from the company and I was able to attend the Air quality training conducted by NASA, in Salt Lake City, Utah. After the training I am using the data* ***and also I am getting help from the ARSET team whenever I neede****d. The training was so intensive and the lecture was presented in a very clear way. However, the time was short as compared to the material presented. The lecturers were able to deliver the material in a very nice way and the follow up and the materials given to us are very important to work on what we learned and to make the best out of it****. This training is very important and has a lot other applications to that of air quality. I believe that the solar industry also can benefit from such training. Thank you ARSET and I hope to see you again.****"*

Idaho Department of Environmental Quality

"*Because of the training, I use the archive ability of the data libraries as well as the worldview tool by EOSDIS on a regular basis*."

NASA Training for the Bay Area Air Quality Management District

- September 10 - 12, 2013, Santa Clara, CA
- Hosted by BAAQMD
- 16 attendees from local AQ agencies, private sector, and academia
- **NASA aerosol products, and NASA / NOAA smoke/fire and products** and their applications to air quality monitoring.

Course Taught by Pawan Gupta and Yang Liu

Consider participating in an ARSET Training

- ***ARSET works directly with NASA funded PIs.***
- ***You can participate online or during an in-person training.***
- ***Share with end-users your research, methods, or decision support tools***

Training Activities Coming up

- **Online course starting next month**: October – November, 2013
  Course open
  One hour per week – register online at
  http://airquality.gsfc.nasa.gov

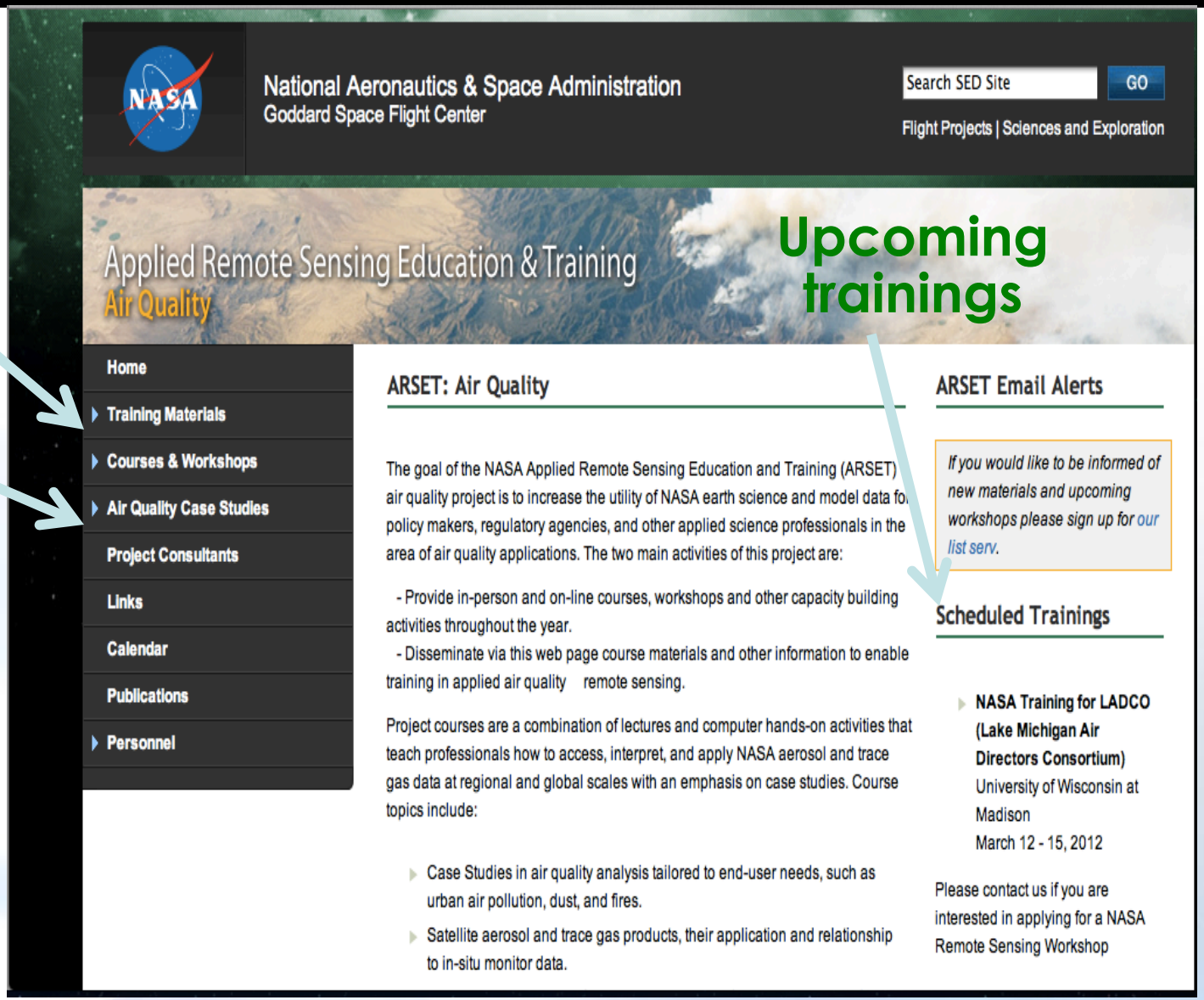
- **Online course for Indian air quality professionals in** (also supporting SERVIR node in Nepal).
  Spring 2014.

- **Hands-on course for NESCAUM (Northeast States Coordinated Air Use Management)**. *Limited availability.*
  Course Dates: November 19 - 21
  Location: Albany, New York
- **Hands-on course for Texas Department of Environmental Quality (TCEQ)**
  Course Dates: January 6 - 9
  Location: Austin, Texas

http://airquality.gsfc.nasa.gov/

Publicly available Modules

Case Studies



ARSET Web Sites and Updates

http://water.gsfc.nasa.gov/ (Water)

http://airquality.gsfc.nasa.gov/ (Air Quality)

Updates and notification of upcoming workshops:

Water Resources/Disasters

https://lists.nasa.gov/mailman/listinfo/nasa-water-training

Air Quality

https://lists.nasa.gov/mailman/listinfo/arset